

ABSTRACT OF THE DISCLOSURE

A method for performing an electrophoretic separation on a microfluidic device includes applying an electric field to electrokinetically move a sample along a channel towards a location. The sample may be concentrated by application of the electric field. The method further comprises optically monitoring the location for at least a portion of the sample. Once the sample is detected, the electric field is automatically changed to further manipulate the sample. The sample may be spatially separated along a separation channel or channel portion. The closed-loop control of electric fields may be performed using a control unit adapted to apply a voltage potential between electrodes and an optical detector such as an LIF detector.